NORTHERN ARIZONA UNIVERSITY College of Engineering, Forestry, and Natural Sciences

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| **Group:** | James Beasley, Charles Beck, Charles Duso, Alexander Grzesiak, Erik Strauss |
| **Project Title:** | Boston University - Microfluid Experimentation Data Generator |
| **Deliverable:** | D_2_1 - Vision Document |
| **Course:** | CS386 – Spring 2017 |
| **Instructor:** | Professor Gerosa |
| **Github:** | https://github.com/TheAwesomeEgg/CS386ProjectGroup1.git |

# Introduction

The purpose of this document is to define the view of the stakeholders for the solution that we plan to develop. We define this view in terms of the key needs and features that the stakeholders have communicated to us based on their requests and constraints. This document is based on a vision template provided by the Eclipse organization.

# Positioning

In this section, we will describe the problem our solution was derived from as well as the position the product will fill in terms of the scope of the problem.

**Problem Statement**

An interdisciplinary, research team at Boston University is currently in need of a system to efficiently communicate instructions to experimental hardware. This lack of a system currently affects all team members and research affiliates. Without a system in-place, the team cannot make significant progress with their work. A successful solution would be portable, easy to use, and easy to extend, allowing the users to communicate with the experimental hardware.

**Product Position Statement**

The product is intended for the Microfluidics research team at Boston University, but is not exclusive and can be used by other groups if necessary. The product will be a web application that generates an instruction set to communicate with experimental hardware. The product is intended to save the user from unnecessary manual entry of instructions.

# Stakeholder Descriptions

The purpose of this section is to describe the stakeholders for whom the product is targeted towards. We will also detail the intended user's working environment with which they will use our product.

| Name | Description | Responsibilities |
|---|---|---|
| Taylor Walker | Northern Arizona University computer science student. | Taylor currently studies computer science at Northern Arizona University and was chosen to be interviewed because he is a great representation of somebody who could be a user of the Neptune system, but is not affiliated with Bostin University, and would be approaching the software from an outside prospective. |
| Shane McCormack | Member of the Boston University research team behind the Neptune project. | Shane is currently an undergrad student at Boston University studying both computer engineering and biomedical engineering. He oversees much of the software development relating to the Neptune project and plans to continue this into his postgrad studies. |
| Brad Gibbons | Kansas University computer engineering student. | Brad Gibbons is a computer engineering student at Kansas University and studies topics like assembly language programming, embedded systems, and computer hardware. He was chosen to be interviewed because he could offer a uniquely technical perspective to how he likes to see his software operate under the hood. |
| Anish Asthana | Boston University computer engineering student. Colleague of Shane McCormack and likely user of the Neptune system upon completion. | Anish studies computer engineering at Boston University alone side Shane McCormack. He was chosen to be interviewed not only because he is a possible user of the completed Neptune system, but because he a good representation of a power user and could give us insight into some of the concerns and opinions that may be different from more casual computer users. |

*Table 1: Stakeholder Descriptions*

**User Environment**

The target user works in a variety of working environments: Mac OS X, Windows 10, and Linux distributions. Our application must support the working environments they are currently using, but we will not need to support future systems. There are four primary users who the product directly applies to, but there may be more in the future. The current users are forced to manually enter data and this is time consuming. Our product will have not have to integrate with any other applications, but we will need to comply with the instructions supported by the hardware.

## Product Overview

The following section serves to provide a well-documented list of the needs and features the product will support.

**Needs and Features**

Listed below is a table that summarizes the needs and features of the application.

| Need | Priority | Features | Planned Release |
|---|---|---|---|
| Usability | High | Easy to navigate, and low learning curve | End of cycle |
| Command Conversion | High | Translate commands into instructions | End of cycle |
| File Manipulation | High | Must be able to read and interpret files – as well as – write files appropriately | End of cycle |
| Reliability | High | Commands must correctly be converted to ensure that experimental results are not skewed | End of cycle |
| Speed | Low | Instruction generation must be relatively fast, but as this will most likely be apparent due to the nature of the program, we set the priority to low | End of cycle |

*Table 2: Needs and Features*

## Other Product Requirements

This final section exists solely to describe any other requirements of the product that may not have been described in the previous section, but that we will strive to accomplish with the release of the product.

| Requirement | Priority | Planned Release |
|---|---|---|
| Extensibility | Low | End of cycle |
| Portability | High | End of cycle |
| User Interface | Medium | End of cycle |

*Table 3: Additional Requirements*

## Conclusion

This concludes the vision document. We are particularly satisfied with the needs of the stakeholder as we believe we can reliably assure those needs in a timely fashion.

## Group Participation

Listed below is a table containing the group participation weights for each team member.

| Team Member | Participation |
|---|---|
| James Beasley | 33% |

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| Charles Beck | 33% |
| Charles Duso | 33% |
| Alexander Grzesiak | 0% |
| Erik Strauss | 0% |

*Table 4: Group Participation Weights*